

Citation:

Hingson RW, Zha W. Age of drinking onset, alcohol use disorders, frequent heavy drinking, and unintentionally injuring oneself and others after drinking. *Pediatrics*. 2009 ;123(6):1477-84.

PubMed ID: [19482757](#)

Study Design:

Prospective Cohort Study

Class:

B - [Click here](#) for explanation of classification scheme.

Research Design and Implementation Rating:



NEUTRAL: See Research Design and Implementation Criteria Checklist below.

Research Purpose:

To explore whether early age of drinking onset is prospectively associated with respondents unintentionally injuring themselves and others when respondents were under the influence of alcohol, controlling for current alcohol dependence/abuse, frequency of consuming 5 drinks per occasion, and other demographic characteristics.

Inclusion Criteria:

- Aged 18 and older
- Minimum legal drinking age in the United States
- Who had at least 1 drink

Exclusion Criteria:

In the second wave interviews, respondents must not have:

- Died
- Become incapacitated
- Become institutionalized
- Entered the military
- Left the United States

Description of Study Protocol:

Recruitment

- In-person interviews were conducted from 2001 to 2002 adults aged 18 yrs older (Wave 1, N=43,093) and also from 2004 to 2005 (Wave 2, N= 39,959 eligible respondents, 34,653 were reinterviewed).

Design: Prospective cohort study

- From 2001 to 2002, in-person interviews were conducted with a national multistage (wave 1, N=43,093, aged 18 years older) and from 2004 to 2005, of eligible respondents (wave 2, N=39,959) and were reinterviewed (N=34,653). The cumulative 2-survey response rate was 70.2%.
- Respondents were asked the age at which they first started drinking (not counting tastes or sips), diagnostic questions for alcohol dependence and abuse, questions about behaviors that increase risk of injury, and whether respondents, when under the influence of alcohol, injured themselves or someone else as a driver in a motor vehicle crash or in some other way.
- Respondents were asked in wave 1 their age and when they first started drinking, categorized as <14, 14, 16, 17, 18, 19, 20 and ≥21 years of age.

- The NESARC used the NIAAA's Alcohol Use Disorder and Associated Disabilities Interview Schedule, Diagnostic Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) version (AUDADIS-IV), a state-of-the-art, structured, diagnostic interview designed for use by non-clinician lay interviewers.
- Covariates selected for the analyses were, in previous research, independently associated with either heavy drinking, alcohol dependence, experiencing motor vehicle crashes or injuries after drinking, or other risky behavior such as fighting after drinking and suicide attempts.
- Respondents were asked if they ever or in the past year used sedatives, tranquilizers, pain killers, stimulants, marijuana, cocaine, hallucinogens, inhalants, heroin or other medicines. Cigarette users were persons who ever smoked 100 cigarettes.

Blinding used (if applicable): not applicable

Intervention (if applicable): not applicable

Statistical Analysis

- Analyses focused on respondents who had at least 1 drink since the wave 1 interview. Bivariate analyses explored distributions across age of drinking onset (ages ≤ 14 , 15-16, 17-18, 19-20 and ≥ 21 years) for alcohol abuse/dependence diagnosis (none, abuse, dependence), drinking ≥ 5 drinks during the heaviest drinking period since the last interview , drinking under the influence, and getting into risky situations, injuring oneself and injuring others after drinking since the last interview.
- Design based χ^2 tests evaluated statistical significance of these distributions.
- Multinomial logistic regression models with proportional odds studied the association between age of drinking onset and, since the last interview, experiencing alcohol dependence/abuse, the frequency of drinking ≥ 5 drinks during the heaviest drinking period, driving under influence of alcohol, and placing oneself in a risky situation, while controlling for age, gender, race/ethnicity, marital status, education, poverty level, family history of alcoholism, personal smoking and drug use history, childhood depression, and antisocial behavior.
- In the models, they included the interval between waves 1 and 2 to offset the effect of unequal time lapse.
- Odds ratios (ORs) and 95% CIs were derived to differentiate the impact of age of drinking onset on these variables.
- Fitted models controlling for demographic characteristics as well as alcohol -related variable in wave 1 and between waves 1 and 2 (drinking ≥ 5 drinks per occasion, alcohol abuse/dependence, driving motor vehicles, and getting into risky situations under the influence of alcohol).
- Relative risks for each age level of drinking onset and 95% CIs as well as for other confounders were derived.

Data Collection Summary:

Timing of Measurements

- Wave 1: 2001-2002
- Wave 2: 2004-2005

Dependent Variables

- Age of drinking
- Alcohol dependence
- Alcohol abuse

Independent Variables

- Drinking ≥ 5 drinks during the heaviest drinking period since the last interview , drinking under the influence, and getting into risky situations, injuring oneself and injuring others after drinking

Control Variables

- Age
- Gender
- Race/ethnicity
- Marital status
- Education
- Poverty level
- Family history of alcoholism
- Personal smoking and drug use history
- Childhood depression
- Antisocial behavior

Description of Actual Data Sample:

Initial N:

Wave 1 (N=43,093) and also from 2004 to 2005 (Wave 2, N= 39,959 eligible respondents, 34,653 were reinterviewed)

Attrition (final N): 34,653 reinterviewed in wave 2

Age: Mean age 45 years

Ethnicity: Not reported

Other relevant demographics:

Anthropometrics

Location: United States

Summary of Results:

Key Findings

- Wave 1, of respondents who drank alcohol, 3% reported increased their chances of getting hurt.
- 135 drove under the influence, 2% were injured, 1% injured someone else under the influence of alcohol. One in 5 people injured after respondents were drinking were in traffic crashes.
- More than one third of these injuries occurred when respondents younger than age 25 were under the influence, although only 7% of respondents were that young.
- When respondents were under the influence, 20% of those injured were other people, more than one third in traffic crashes. 3% of respondents met alcohol dependence and 6% met alcohol abuse criteria.
- During their heaviest drinking period, 12% consumed >5 drinks per occasion at least weekly, and 23% less often.
- Only 9% and 10% respectively, of respondents meeting alcohol dependence or abuse criteria during wave 1 did so during wave 2.
- Among drinkers since the last interview, 2% consumed ≥ 10 drinks at least weekly, and 11% less often. Persons who consumed ≥ 10 vs ≥ 5 drinks per occasion were more likely to have driven after drinking too much (16% vs 8% respectively) and placed themselves in risky situations after drinking (45% vs 30%, respectively).
- This reanalysis negligibly affected odds of early drinkers injuring themselves after drinking. However, the OR of persons who began drinking before age 14 injuring someone else was 1.9 (95% CI: 0.9-3.8), just below statistical significance.
- Respondents who started drinking at younger ages were significantly more likely since wave 1 to experience alcohol use disorders, consume >5 drinks per occasion at least weekly, drive under the influence of alcohol, put themselves in risky situations after drinking and injure themselves and others under the influence.
- Logistic regression analyses revealed that the younger respondents began drinking, the greater their likelihood of meeting alcohol dependence and abuse criteria, drinking ≥ 5 drinks per occasion at least weekly, driving under the influence of alcohol, and putting themselves in risky situations after drinking.
- In addition, the younger respondents began drinking the greater their likelihood between waves 1 and 2 when under the influence of alcohol of injuring themselves and someone else.
- The relationships were statistically significant after controlling for numerous respondent characteristics as well as during the year preceding wave 1 and between waves 1 and 2, having experienced alcohol dependence or abuse, frequency of consuming ≥ 5 drinks, driving under the influence, or putting oneself in risky situations after drinking.
- Logistic regression analyses revealed that the younger respondents were when they started drinking, the greater the likelihood that, between the 2 surveys, they experienced alcohol dependence/abuse, drank 5 drinks per occasion at least weekly drove under the influence of alcohol, and placed themselves in situation after drinking where they could be hurt.
- After controlling for those injury risk and sociodemographic characteristics, respondents who began drinking at earlier ages remained more likely between the 2 surveys to have, under the influence of alcohol, unintentionally injured themselves and someone else.
- More than one third of those injuries occurred when respondents 25 years of age were under the influence, although only 7% of respondents were 25 years of age. Persons other than respondents experienced 20% of those unintentional injuries, more than one third of them in traffic.

Author Conclusion:

Our results underscore the need to prevent early drinking onset and injuries to drinkers and that achieving this objective may also help prevent potential drinkers from unintentionally injuring other people.

Reviewer Comments:

Large sample size. Only two measurements made during 5 years of follow-up. Authors note the following limitations:

- *Early-onset drinkers more often drank heavily and experienced alcohol dependence, which may account for their greater likelihood of injuring themselves and others after drinking*
- *Poor recall and social desirability biases may foster under-reporting of drinking, risky*

behavior, and injuries

- *Potential confounding variables such as genetics, disinhibitory behavior patterns, and other psychiatric disorders may be related to early drinking, heavier drinking, risky behavior, and alcohol-related motor vehicle crashes and injuries*

Research Design and Implementation Criteria Checklist: Primary Research

Relevance Questions

- | | | |
|----|---|-----|
| 1. | Would implementing the studied intervention or procedure (if found successful) result in improved outcomes for the patients/clients/population group? (Not Applicable for some epidemiological studies) | Yes |
| 2. | Did the authors study an outcome (dependent variable) or topic that the patients/clients/population group would care about? | Yes |
| 3. | Is the focus of the intervention or procedure (independent variable) or topic of study a common issue of concern to nutrition or dietetics practice? | Yes |
| 4. | Is the intervention or procedure feasible? (NA for some epidemiological studies) | Yes |

Validity Questions

- | | | |
|------|---|-----|
| 1. | Was the research question clearly stated? | Yes |
| 1.1. | Was (were) the specific intervention(s) or procedure(s) [independent variable(s)] identified? | Yes |
| 1.2. | Was (were) the outcome(s) [dependent variable(s)] clearly indicated? | Yes |
| 1.3. | Were the target population and setting specified? | Yes |
| 2. | Was the selection of study subjects/patients free from bias? | Yes |
| 2.1. | Were inclusion/exclusion criteria specified (e.g., risk, point in disease progression, diagnostic or prognosis criteria), and with sufficient detail and without omitting criteria critical to the study? | ??? |
| 2.2. | Were criteria applied equally to all study groups? | N/A |
| 2.3. | Were health, demographics, and other characteristics of subjects described? | Yes |
| 2.4. | Were the subjects/patients a representative sample of the relevant population? | Yes |
| 3. | Were study groups comparable? | N/A |
| 3.1. | Was the method of assigning subjects/patients to groups described and unbiased? (Method of randomization identified if RCT) | N/A |

3.2.	Were distribution of disease status, prognostic factors, and other factors (e.g., demographics) similar across study groups at baseline?	N/A
3.3.	Were concurrent controls used? (Concurrent preferred over historical controls.)	N/A
3.4.	If cohort study or cross-sectional study, were groups comparable on important confounding factors and/or were preexisting differences accounted for by using appropriate adjustments in statistical analysis?	N/A
3.5.	If case control or cross-sectional study, were potential confounding factors comparable for cases and controls? (If case series or trial with subjects serving as own control, this criterion is not applicable. Criterion may not be applicable in some cross-sectional studies.)	N/A
3.6.	If diagnostic test, was there an independent blind comparison with an appropriate reference standard (e.g., "gold standard")?	N/A
4.	Was method of handling withdrawals described?	Yes
4.1.	Were follow-up methods described and the same for all groups?	Yes
4.2.	Was the number, characteristics of withdrawals (i.e., dropouts, lost to follow up, attrition rate) and/or response rate (cross-sectional studies) described for each group? (Follow up goal for a strong study is 80%).	Yes
4.3.	Were all enrolled subjects/patients (in the original sample) accounted for?	Yes
4.4.	Were reasons for withdrawals similar across groups?	N/A
4.5.	If diagnostic test, was decision to perform reference test not dependent on results of test under study?	N/A
5.	Was blinding used to prevent introduction of bias?	No
5.1.	In intervention study, were subjects, clinicians/practitioners, and investigators blinded to treatment group, as appropriate?	N/A
5.2.	Were data collectors blinded for outcomes assessment? (If outcome is measured using an objective test, such as a lab value, this criterion is assumed to be met.)	No
5.3.	In cohort study or cross-sectional study, were measurements of outcomes and risk factors blinded?	No
5.4.	In case control study, was case definition explicit and case ascertainment not influenced by exposure status?	N/A
5.5.	In diagnostic study, were test results blinded to patient history and other test results?	N/A
6.	Were intervention/therapeutic regimens/exposure factor or procedure and any comparison(s) described in detail? Were intervening/factors described?	???

6.1.	In RCT or other intervention trial, were protocols described for all regimens studied?	N/A
6.2.	In observational study, were interventions, study settings, and clinicians/provider described?	Yes
6.3.	Was the intensity and duration of the intervention or exposure factor sufficient to produce a meaningful effect?	???
6.4.	Was the amount of exposure and, if relevant, subject/patient compliance measured?	N/A
6.5.	Were co-interventions (e.g., ancillary treatments, other therapies) described?	N/A
6.6.	Were extra or unplanned treatments described?	N/A
6.7.	Was the information for 6.4, 6.5, and 6.6 assessed the same way for all groups?	N/A
6.8.	In diagnostic study, were details of test administration and replication sufficient?	N/A
7.	Were outcomes clearly defined and the measurements valid and reliable?	???
7.1.	Were primary and secondary endpoints described and relevant to the question?	Yes
7.2.	Were nutrition measures appropriate to question and outcomes of concern?	Yes
7.3.	Was the period of follow-up long enough for important outcome(s) to occur?	???
7.4.	Were the observations and measurements based on standard, valid, and reliable data collection instruments/tests/procedures?	Yes
7.5.	Was the measurement of effect at an appropriate level of precision?	Yes
7.6.	Were other factors accounted for (measured) that could affect outcomes?	???
7.7.	Were the measurements conducted consistently across groups?	N/A
8.	Was the statistical analysis appropriate for the study design and type of outcome indicators?	Yes
8.1.	Were statistical analyses adequately described and the results reported appropriately?	Yes
8.2.	Were correct statistical tests used and assumptions of test not violated?	Yes
8.3.	Were statistics reported with levels of significance and/or confidence intervals?	Yes
8.4.	Was "intent to treat" analysis of outcomes done (and as appropriate, was there an analysis of outcomes for those maximally exposed or a dose-response analysis)?	No

8.5.	Were adequate adjustments made for effects of confounding factors that might have affected the outcomes (e.g., multivariate analyses)?	Yes
8.6.	Was clinical significance as well as statistical significance reported?	Yes
8.7.	If negative findings, was a power calculation reported to address type 2 error?	N/A
9.	Are conclusions supported by results with biases and limitations taken into consideration?	
9.1.	Is there a discussion of findings?	Yes
9.2.	Are biases and study limitations identified and discussed?	Yes
10.	Is bias due to study's funding or sponsorship unlikely?	
10.1.	Were sources of funding and investigators' affiliations described?	Yes
10.2.	Was the study free from apparent conflict of interest?	Yes

Copyright American Dietetic Association (ADA).